Quino Checkerspot Butterfly

(*Euphydryas editha quino*)

YEAR 2000
SURVEY PROTOCOL

U.S. Fish and Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008

SUMMARY

The quino checkerspot butterfly (*Euphydryas editha quino*, quino) was listed as an endangered species on January 16, 1997 (62 FR 2313), and is protected under the provisions of the Endangered Species Act of 1973, as amended (Act). Incidental take authorization for the quino should be obtained pursuant to sections 7 or 10 of the Act prior to activities that may result in take. This recommended survey protocol provides guidance on surveys and outlines requirements for biologists conducting quino butterfly surveys under recovery permits issued under the Act.

In revising the year 2000 survey protocol and map we consulted with our Quino Recovery Technical Team and other biologists knowledgeable about this species, reviewed field data and scientific literature on quino and other subspecies of *Euphydryas editha*, and reviewed comments we received during and following a public workshop on the draft year 2000 survey protocol.

We recommend protocol surveys for all sites within a survey area (see Year 2000 Quino Survey Area Map). Protocol surveys consist of a site assessment conducted prior to or during the first week of the butterfly flight season to determine if the site contains areas where butterfly surveys are recommended. If a site is comprised solely of excluded areas, weekly butterfly surveys are not recommended. If a site is not entirely excluded areas, then weekly butterfly surveys are recommended for the non-excluded areas of the site during the identified 5-week survey season.

Permits are not required for biologists conducting site assessments. Recovery permits under section 10(a)(1)(A) of the Act and issued by the U.S. Fish and Wildlife Service (Service) are required to conduct quino butterfly surveys.

The following items summarize the year 2000 quino survey protocol:

- Site assessments should be conducted prior to (and not concurrent with) the first weekly butterfly survey.
- Butterfly surveys should be conducted weekly for the duration of the 5-week survey season for non-excluded portions of the site.
- Dates of the butterfly survey season will be determined based on monitoring and announced by the Service one to two weeks prior to the season opening (generally late February to early March).
- Live capture and transport of a quino larva or butterfly by permitted biologists is authorized under very limited circumstances for identification and documentation purposes.

This survey protocol and additional information can be downloaded from U.S. Fish and Wildlife Service's Region 1 web page at www.r1.fws.gov/text/quino.html or can be obtained by contacting the Portland Regional Office at (503) 231-2063 or the Carlsbad Fish and Wildlife Office at (760) 431-9440.

INTRODUCTION

The quino checkerspot butterfly (*Euphydryas editha quino*, quino) was listed as an endangered species on January 16, 1997 (62 FR 2313). This animal is protected under the provisions of the Endangered Species Act of 1973, as amended (Act). To avoid possible take of this federally listed species, we recommend that site assessments be conducted for sites partially or completely within year 2000 survey areas and butterfly surveys be conducted where indicated by site assessments. Butterfly surveys may only be conducted by a biologist possessing a current recovery permit for the quino pursuant to section 10(a)(1)(A) of the Act (permitted biologist). This permit allows for the pursuit of butterflies for identification and photography, and under very limited circumstances (described below) authorizes live capture and transport of a larva or butterfly for verification.

In revising the year 2000 survey protocol and survey area map we consulted with our Quino Recovery Technical Team and other biologists knowledgeable about this species, reviewed field data and scientific literature on quino and other *Euphydryas editha* subspecies, and reviewed comments received during and after a November 1999 public workshop on the draft year 2000 survey protocol.

We continue to work with local, State, and Federal biologists; scientific and academic institutions; commercial organizations; and other interested parties to collect additional data on the distribution, ecology, and biology of the quino. We will revise this survey protocol as needed using the best available data. This survey protocol supersedes all previously recommended quino survey protocols.

YEAR 2000 QUINO CHECKERSPOT BUTTERFLY SURVEY PROTOCOL

Protocol surveys are recommended for all sites partially or completely within year 2000 survey areas (see Year 2000 Quino Survey Area Map). Protocol surveys consist of a site assessment prior to or during the first week of the butterfly survey season to determine if the site contains areas recommended for butterfly surveys. If the site is determined to be comprised solely of excluded areas (described below), surveys are not recommended. If a site has areas suitable for butterfly surveys (non-excluded areas), then surveys should be conducted for those portions of the site during the entire 5-week butterfly survey season.

Due to the close proximity of documented quino populations, we recommend that sites within Survey Areas 1 and 3 have a protocol survey conducted during the survey season immediately prior to any ground-disturbing activities.

Butterfly emergence from pupae varies according to environmental factors, so the butterfly flight season varies regionally and annually. To ensure that butterfly surveys are initiated during the beginning of the flight season, we will monitor the phenology of quino larvae and their host plants to determine the beginning of the 5-week survey season and announce the opening at least one week in advance. This announcement will generally occur in February or early March.

SITE ASSESSMENTS

Site assessments should be conducted before or during the first week of the butterfly survey season (but not concurrent with a butterfly survey) to identify which portions of a site should be surveyed for quino. These assessments involve conducting a general field survey of the site and broadly mapping excluded areas and butterfly survey areas on a U.S. Geological Survey 7.5' (1:24,000) topographic quadrangle map that has been enlarged 200 percent (See Appendix 1 for example). We request that

this site assessment map be submitted within 45 days of the close of the survey season. We will not be providing concurrence on site assessments. We will use negative and positive site assessments and butterfly survey results to refine future survey area maps.

Excluded Areas

The following areas are not recommended for butterfly surveys:

- Orchards, developed areas, or in-fill parcels largely dominated by non-native vegetation;
- Active/in-use agricultural fields without natural or remnant inclusions of native vegetation (i.e., fields completely without any fallow sections, unplowed areas, and/or rocky outcrops);
- Closed-canopy forests or riparian areas, dense chaparral, and small openings completely enclosed within a closed-canopy or dense chaparral area;

  "Closed-canopy" describes vegetation in which the upper portions of the plants converge (are touching) to the point that the open space between two or more plants is not significantly different than the open space within a single plant. Dense chaparral is defined here as vegetation so thick that it is inaccessible to humans except by thrashing or bushwhacking.

Butterfly Survey Areas

All areas that are not excluded should be surveyed for butterflies, regardless of quino host plant presence, absence, and/or density. Quino is generally associated with sage scrub, open chaparral, grasslands, and vernal pools, especially open or sparsely vegetated areas, hilltops and ridgelines, rocky outcrops, trails, and dirt roads.

BUTTERFLY SURVEY GUIDELINES

Surveys for quino butterflies are to be conducted:

- By a biologist with a current Service recovery permit for this species. Quino protocol surveys **may not** be conducted concurrently with any other focused survey (e.g., coastal California gnatcatcher survey).
- Once per week throughout the 5-week survey season on non-consecutive days. **All non-excluded portions of the site must be thoroughly surveyed for butterflies during each weekly survey, even if quino are observed on an earlier visit.**
- At an average rate of 10-15 acres per hour. In large, open areas, 5-10 meters on either side of a survey route can generally be examined for quino butterfly presence, so survey routes in these areas should be roughly parallel and 10 to 20 meters apart. Surveyors should walk along the edge (within 1 meter) of excluded areas such as closed-canopy shrublands.
- Only under acceptable weather conditions. Weekly surveys **will not** be considered valid if one or more of the following weather conditions occur: fog, drizzle, or rain; sustained winds greater than 15 miles per hour measured 4-6 feet above ground level; temperature in the shade at ground level less than 60°F on a clear, sunny day; or temperature in the shade at ground level less than 70°F on an overcast or cloudy day.

A weekly survey may only be missed because of week-long adverse weather. If weather conditions as described above preclude conducting a weekly survey, two (2) surveys must be conducted on non-consecutive days the following week. If an entire week of adverse weather occurs during the fifth (last) week of the survey season, one survey only may be conducted the following (sixth) week. If adverse weather precludes surveys two weeks in a row, two protocol surveys must be conducted on non-consecutive days each of the two weeks immediately following the weeks of adverse weather.

Survey Maps

- Map the locations of all adult quino and larvae observed on a non-enlarged 7.5' USGS topographic map (Appendix 2). We suggest using a Global Positioning System (GPS) unit and/or aerial photos if available. All GPS locations should be corrected with an accuracy not to exceed 5 meters.

- Map all areas of quino larval host plants on your site assessment map (Appendix 1). Provide a list of the plant communities on the site.

Survey Techniques

Required equipment for permitted biologists includes: binoculars, wind meter, thermometer, and a camera with close focus telephoto or macro lens. A GPS unit is also useful. Permitted biologists surveying outside Survey Areas 1 and 3 should carry a butterfly net, clear glass or plastic jar with a lid, and 35 mm film canister.

- Survey carefully to avoid trampling or otherwise harming quino larvae and butterflies. *Plantago erecta*, a small, often inconspicuous annual plant, is quino's primary host plant. Care should be taken to avoid stepping on all host plants, whether occurring singly, in small patches, or in dense stands. Female quino often use plants found on bare soil or in open areas for laying their eggs.

- Walk slowly and stop periodically within areas that have an especially high potential for quino use, such as patches of host plants or nectar sources; ridgelines and hilltops; bare or sparsely vegetated areas between shrubs; and areas of cryptobiotic soil crusts. Field observations indicate that females may lay eggs on *Castilleja exserta* and/or *Cordylanthus rigidus*. Nectar plants most likely to be visited include but are not limited to members of the Asteraceae (*Lasthenia* spp., *Layia* spp., *Ericameria* spp.), *Cryptantha* spp., and *Allium* spp. Quino cannot use flowers with deep corolla tubes or those evolved to be opened by bees such as snapdragons.

- Stop occasionally to look around–surveyors standing still are more likely to see a moving butterfly. Use binoculars to scan the area ahead and around you, and to help identify butterflies from a distance.

- Follow the movements of other butterflies. Quino males are aggressive, can spot other butterflies from a distance, and will chase them away. If quino are resting with wings closed, they can be very difficult to notice until another butterfly flies by and they give chase.

Approaching a Butterfly Suspected of Being a Quino

When approaching a butterfly, move slowly and keep the movement of your hands, arms, legs, and body to a minimum. If the butterfly is first seen in flight, follow it discreetly, keeping at least 5-6 feet away from it until it alights (lands). Do not make sudden movements.

If the butterfly is circling, stand still and wait for it to alight–if it perceives your movement, it is less likely to stop. Observe the flight pattern. If the butterfly is a quino and flies in a zigzag motion with frequent abrupt changes of direction, it is likely a male. If it appears to be flying in a straight line, or with more gradual changes of direction, it is likely a female.

Once the butterfly has alighted, or if it is first seen when alighted, approach it slowly from an angle where it is not likely to perceive your shadow–from the side may give you the best view of the butterfly's body. Take a photograph of the butterfly when approximately 5-6 feet away (or at a greater distance if your camera has adequate telephoto capabilities), taking care not to allow your shadow to fall on the butterfly.

Slowly move toward the butterfly, taking photographs periodically. When your shadow is within about 1 meter of the butterfly, circle slowly around it if necessary to approach it more closely without casting a shadow on it. As you get closer you should move more and more slowly. Insects that are engaged in some activity such as courtship or feeding on flowers are easier to approach than those that are basking.

Permitted biologists may wish to practice their approach and species identification techniques with other grassland Nymphalid butterflies such as buckeye *(Junonia coenia*), California ringlet *(Coenonympha californica*), and West Coast lady *(Vanessa annabella)* as it will greatly improve their ability to approach and identify quino.

QUINO OUTSIDE THE AREAS OF RECENT DOCUMENTATION

If a permitted biologist observes a larva or butterfly known or suspected to be a quino **outside of Survey Areas 1 and 3**, s/he may live capture one larva or butterfly using the techniques described below. Notify us by phone (760) 431-9440 and fax (760) 431-5901 the same day and as soon as possible after capture so we can arrange for identification.

Quino butterflies or larvae may not be captured or handled within Survey Areas 1 and 3.

Live Capture Techniques

To collect a larva, gently pick it up, taking care not to crush it, and place it in a 35 mm film canister or similar container. Keep the container in a cool place out of direct sunlight.

To capture a butterfly, try to net it using a gentle sweeping motion through the air. If the animal is resting, you may be able to approach it slowly and place the net over it. Do not slap the net on the ground or onto a bush to capture a resting adult–this will likely result in damage or death. Do not chase the butterfly. Many butterflies will return to the same basking site or shrub after a disturbance. Once the adult has been netted, gently place the individual in a clear glass or plastic jar with ventilation. Keep the animal in a cool location while it is transported for identification. Collect the larva or butterfly even if it is inadvertently injured or killed during capture and contact the Service as described below under "Reporting Requirements."

Map where the known or suspected quino was captured on a non-enlarged 7.5' USGS topographic map (Appendix 2). Include in your field notes a description of the location, habitat type, time of day, date, weather conditions, and the collector's name and permit number.

REPORTING REQUIREMENTS

If a permitted biologist observes or collects a **suspected or known** quino adult or larva, within 24 hours s/he is to notify us by phone and fax; phone (760) 431-9440 and fax (760) 431-5901. Fax a photocopy of a 7.5' USGS topographic map with the observation site marked and a detailed description of the location of the quino.

Within 45 days of the close of the butterfly survey season, permitted biologists must send us a written report based on the terms and conditions of the quino recovery permit and signed by the permitted biologist(s) who conducted the surveys. Survey reports should include:

- Name, permit number, and legible copies of field notes of the permitted biologist(s) who conducted the surveys. Please note that **all** personnel conducting butterfly surveys must be authorized under a section 10(a)(1)(A) recovery permit for quino.
- Non-enlarged 7.5' USGS topographic map (and aerial photo if available) with quino larvae and/or adult locations marked.
- Site assessment map with quino larval host plant locations mapped.
- Dates and times of each weekly survey.
- Air temperature, wind speed, and weather conditions at the start and end of each survey.
- List of butterflies observed during each weekly survey.
- List of larval host plants, nectar plants, and plant communities observed on the site.
- Photographs of any quino larvae and/or butterflies observed. **Within survey areas 1 and 3 photographs should be taken without handling or in any way harming larvae or butterflies**.

Survey reports should be sent to Field Supervisor, Carlsbad Fish and Wildlife Office, 2730 Loker Avenue West, Carlsbad, CA 92008.

ADDITIONAL INFORMATION AND LIMITATIONS

Butterfly surveys may not be considered valid if: 1) unfavorable weather such as drought limits quino butterfly detectability or the flight season; 2) the specific survey methods described above are not followed (unless deviations are requested in writing prior to the survey and approved by the Service); or 3) additional information indicates that the survey was inadequate or inaccurate.

Questions regarding the protocol or its application to specific projects should be sent by email to: fw1quino@fws.gov. We will try to provide a response within 72 hours for time-sensitive questions.